Listing of Claims

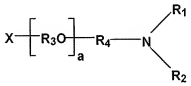
This listing of claims will replace all prior versions, and listings of claims in the application:

What is claimed is:

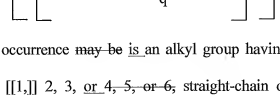
1) (Currently Amended) A process for the formation of a polyurea polymer which comprises the steps of:

A) providing a first composition which comprises one or more organic isocyanates;

B) providing a second composition which comprises one or more polyether polyamino compounds within the definitions of formula:



in which a is any integer between 2 and 7; R_1 is a hydrogen and R_2 ~~are~~ is each independently selected from the group consisting of: ~~hydrogen;~~ an alkyl group having 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 carbon atoms, whether straight-chain or branched; ~~or a radical of the formula:~~

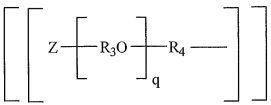


in which R_3 in each occurrence ~~may be~~ is an alkyl group having any number of carbon atoms selected from [[1,]] 2, 3, or 4, ~~5, or 6,~~ straight-chain or branched; R_4 in each occurrence is a straight-chain or branched alkyl bridging group having [[1,]] 2, 3, or ~~4, 5, or~~

6 carbon atoms; ~~Z is a hydroxy group or alkyl group containing 1, 2, 3, 4, 5, or 6 carbon atoms, straight-chain or branched; q is any integer between 0 and 400;~~ and wherein X is any of:

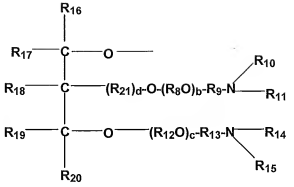
i) a hydroxy group or an alkyl group having any number of carbon atoms selected from 1, 2, 3, 4, 5, or 6; or

ii) a group R_6-N- or R_6-N-R_7- in which R_5 and R_6 are each independently selected from the group consisting of: hydrogen; an alkyl group having 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 carbon atoms, whether straight-chain or branched; ~~or~~

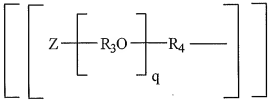


~~as defined above in which Z is a hydroxy group or an alkoxy group having 1, 2, 3, 4, 5, or 6 carbon atoms,~~ and in which R_7 is a straight-chain or branched alkylene bridging group having 1, 2, 3, 4, 5, or 6 carbon atoms; or

iii) a moiety of the formula:



in which R_{10}, ~~R_{11},~~ and R_{14} are each hydrogen, and R_{11} and R_{15} are each independently selected from the group of: ~~hydrogen;~~ an alkyl group having 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 carbon atoms, straight-chain or branched; ~~the moiety~~



~~as defined above in which Z is a hydroxy or alkoxy group having 1, 2, 3, 4, 5, or 6 carbon atoms;~~ R_8 and R_{12} are each independently alkyl groups having 1, 2, 3, 4, 5, or 6 carbon atoms, straight-chain or branched; R_9, R_{13}, and R_{21} are each independently selected from a straight-chain or branched alkyl bridging linkage having 1, 2, 3, 4, 5, or 6 carbon atoms; R_{16}, R_{17}, R_{18}, R_{19}, R_{20} are each independently selected from hydrogen or an alkyl group having 1; 2, 3, 4, 5, or 6 carbon atoms; d is 0 or 1; ~~a is any integer between 0 and 100,~~ with the proviso that when X is a moiety of the formula given in iii) above, b and c [[may]] is each independently [[be]] any integer in the range of 0 to ~~390~~ 6, and the sum of a+b+c is any number between 2 and ~~400~~ 6; and

C) mixing said first component with said second component, so as to form a mixture which cures to form a polyurea polymer,

wherein said one or more polyether polyamino compounds comprise secondary polyether polyamino compounds; and wherein said polyurea polymer has a tear strength of at least 550 pli as measured using ASTM test method D-624.

2) (Original) A process according to claim 1 wherein the number of active hydrogen atoms present in said second composition is greater than the number of isocyanate groups present in said first composition.

3) (Currently Amended) A process according to claim 1 wherein the mixing of said first component with said second component is performed in the ~~substantial~~ absence of a chain extender.

4) (Original) A process according to claim 1 wherein said second composition comprises a secondary polyether polyamine triamine.

5) (Original) A process according to claim 1 wherein said second composition comprises a secondary polyether polyamine diamine.

6) (Original) A process according to claim 1 wherein said second composition comprises at least one material selected from the group consisting of: diamine chain extenders; primary polyether polyamines; and pigments.

7) (Original) A process according to claim 1 wherein said organic isocyanate is an aliphatic isocyanate.

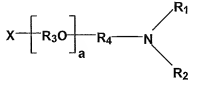
8) (Original) A process according to claim 7 wherein said organic isocyanate is selected from the group consisting of: IPDI; dicyclohexylmethane di-isocyanate; HDI dimer; HDI trimer; and cyclohexyl di-isocyanate.

9) (Original) A process according to claim 1 wherein said organic isocyanate is an aromatic isocyanate.

10) (Original) A process according to claim 9 wherein said organic isocyanate is selected from the group consisting of: tetramethylxylene di-isocyanate; diphenylmethane di-isocyanate; toluene di-isocyanate, and all isomers of the foregoing.

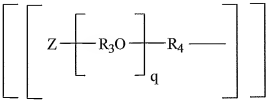
11) (Currently Amended) A polyurea polymer which comprises the reaction product of an organic isocyanate with

one or more secondary polyether polyamino compound(s) within the definitions of formula:



in which a is any integer between 2 and 7; R_1 is a hydrogen and R_2 [[are]] is each independently selected from the group consisting of: ~~hydrogen;~~ an alkyl group having 1, 2,

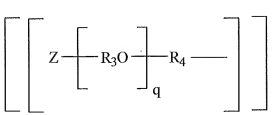
3, 4, 5, 7, 8, 9, or 10 carbon atoms, whether straight-chain or branched; ~~or a radical of the formula:~~



in which R_3 in each occurrence ~~may be~~ is an alkyl group having any number of carbon atoms selected from [[1,]] 2, 3, or 4, ~~5, or 6,~~ straight-chain or branched; R_4 in each occurrence is a straight-chain or branched alkyl bridging group having 1, 2, 3, 4, 5, or 6 carbon atoms; ~~Z is a hydroxy group or alkyl group containing 1, 2, 3, 4, 5, or 6 carbon atoms, straight-chain or branched;~~ q is any integer between [[0]] 1 and 400; and wherein X is any of:

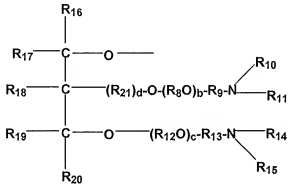
i) a hydroxy group or an alkyl group having any number of carbon atoms selected from 1, 2, 3, 4, 5, or 6; or

ii) a group R_6-N- or R_6-N-R_7- in which R_5 and R_6 are each independently selected from the group consisting of: hydrogen; an alkyl group having 1, 2, 3, 4, 5, 7, 8, 9, or 10 carbon atoms, whether straight-chain or branched; or

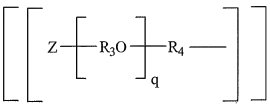


~~as defined above in which Z is a hydroxy group or an alkoxy group having 1, 2, 3, 4, 5, or 6 carbon atoms,~~ and in which R_7 is a straight-chain or branched alkylene bridging group having 1, 2, 3, 4, 5, or 6 carbon atoms; or

iii) a moiety of the formula:



in which R_{10}, [[R_{11},]] and R_{14} are each hydrogen, and R_{11} and R_{15} are each independently selected from the group of: ~~hydrogen;~~ an alkyl group having 1, 2, 3, 4, 5, 7, 8, 9, or 10 carbon atoms, straight-chain or branched; ~~the moiety~~



~~as defined above in which Z is a hydroxy or alkoxy group having 1, 2, 3, 4, 5, or 6 carbon atoms;~~ R_8 and R_{12} are each independently alkyl groups having 1, 2, 3, 4, 5, or 6 carbon atoms, straight-chain or branched; R_9, R_{13}, and R_{21} are each independently selected from a straight-chain or branched alkyl bridging linkage having 1, 2, 3, 4, 5, or 6 carbon atoms; R_{16}, R_{17}, R_{18}, R_{19}, R_{20} are each independently selected from hydrogen or an alkyl group having 1, 2, 3, 4, 5, or 6 carbon atoms; d is 0 or 1; ~~a is any integer between 0 and 100~~,

with the proviso that when X is a moiety of the formula given in iii) above, b and c [[may]] is each independently [[be]] any integer in the range of 0 to [[390]] 6, and the sum of a+b+c is any number between 2 and [[400]] 6;

wherein said polyurea polymer has a tear strength of at least 550 pli as measured using ASTM test method D-624.

12) (Original) A polymer according to claim 11 wherein said secondary polyether polyamino compound(s) comprises a secondary polyether polyamine triamine.

13) (Original) A polymer according to claim 11 wherein said secondary polyether polyamino compound(s) comprises a secondary polyether polyamine diamine.

14) (Currently Amended) A polymer according to claim 11 wherein said polymer includes at least one material selected from the group consisting of: diamine chain extenders; primary polyether polyamines; and pigments ~~in its polymer backbone~~.

15) (Original) A polymer according to claim 11 which includes an aliphatic repeating unit that is derived from an aliphatic isocyanate.

16) (Original) A polymer according to claim 15 wherein said organic isocyanate is selected from the group consisting of: IPDI; dicyclohexylmethane di-isocyanate; HDI dimer; HDI trimer; and cyclohexyl di-isocyanate.

17) (Original) A polymer according to claim 11 wherein said organic isocyanate is an aromatic isocyanate.

18) (Original) A polymer according to claim 17 wherein said organic isocyanate is selected from the group consisting of: tetramethylxylene di-isocyanate; diphenylmethane di-isocyanate; toluene di-isocyanate, and all isomers of the foregoing.

19) (Canceled) A polyurea polymer according to claim 11 wherein said polyurea polymer is a prepolymer having a molecular weight between about 500 and about 20,000 (weight average molecular weight) and an isocyanate content of between about 1 % and 38 % by weight based on the total weight of said prepolymer.

20) (Canceled) A prepolymer according to claim 11 having a viscosity of between about 80 and 10,000 centipoise at 25 degrees C.